

NEW SPECIES OF THE WATER MITE FAMILY HYDRYPHANTIDAE (ACARINA) FROM THE NORTHERN TERRITORY, AUSTRALIA

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ABSTRACT

Four new species of Hydryphantidae, *Mamersa corndorl*, *Pseudohydryphantes wangai*, *P. aroona* and *P. mataranka*, are described from the Northern Territory, Australia. Keys to the known species of *Mamersa* Koenike and the Australasian species of *Pseudohydryphantes* K. Viets are presented.

KEYWORDS: Acarina, Hydryphantidae, *Mamersa*, *Pseudohydryphantes*, new species, northern Australia.

INTRODUCTION

Information concerning the water mite family Hydryphantidae in Australia has increased dramatically over the past few years with the publication of three papers that have increased the number of known species from 5 to 17 (Cook 1986, Harvey 1987, Harvey 1988). Most records of hydryphantids are from the relatively well collected areas of southern Australia, but recent field work in northern Australia has resulted in the discovery of several previously undescribed species that highlight the need for more extensive collecting of water mites in the tropics. One of these species, *Cyclohydryphantes mutarnee* Harvey from north Queensland, has already been described (Harvey 1987). Four others, one belonging to a genus previously unrecorded from Australia (*Mamersa* Koenike), are described.

Methods follow Harvey (1987). Specimens are lodged in the Northern Territory Museum, Darwin (NTM) and the Museum of Victoria, Melbourne (NMV). Those mounted in glycerol gel on microscope slides are designated 'SL', while those remaining in Koenike's fluid or alcohol are designated 'FL'. Terminology of the glandularia follows Harvey (1987).

SYSTEMATICS

Genus *Mamersa* Koenike

Mamersa Koenike, 1898: 372; Lundblad 1949: 17; K. Viets 1956: 146; Cook 1974: 90 (type species *Mamersa testudinata* Koenike, 1898, by monotypy).
Armothyas Nayar, 1969: 48 (type species

Armothyas indicus Nayar, 1969, by original designation). Synonymized by Bader (1980).

Diagnosis. Dorsal and ventral shields present, each divided into a number of platelets. Many pairs of acetabula situated on genital flaps.

Remarks. The genus *Mamersa*, the sole member of the subfamily Mamersinae (Cook 1974), currently contains six species: *M. testudinata* Koenike (southern Africa, Madagascar), with a subspecies *M. testudinata expansa* Cook from Uganda, *M. dividua* Bader (East Africa), *M. petrophila* Cook (India), *M. gennada* Cook (India), *M. indica* (Nayar) (India) and *M. rouxi* Walter (Aru Islands, Sumatra). The new species described here is the first to be recorded from Australia.

Although Bader (1980) raised the Mamersinae to the level of family, I believe that this taxon is best retained in the Hydryphantidae, and that the family be defined by the presence of a stout distal seta on the pedipalpal tibia. This seta is occasionally lost or reduced in some protziines and wandesiines. A similar structure is found elsewhere amongst water mites only in certain genera of the family Pionidae, which are currently placed in separate superfamily to that of the Hydryphantidae (Cook 1974) and are clearly unrelated.

Key to species of *Mamersa* (modified from Bader 1980)

1. Ventrolateralia divided 2
- Ventrolateralia undivided 3
- 2(1). Suture line between coxae III and IV

- lateral *rouxi* Walter
 Suture line between coxae III and IV
 antero-lateral *dividua* Bader
- 3(2). Swimming setae present; dorsolateralia 4 rhomboid 4
 Swimming setae absent; dorsolateralia 4 nearly square
 *petrophila* Cook
- 4(3). Postero-lateral margin of dorsolateralia 4 straight or only slightly convex 5
 Postero-lateral margin of dorsolateralia 4 markedly convex
 *gennada* Cook
- 5(4). Body length greater than 500 μm . 6
 Body length approximately 380 μm (σ), 400 μm (f) . *indica* (Nayar)
- 6(4). Lateral margin of dorsolateralia 4 approximately same length as lateral margin of platelet bearing 1g5
 *corndorl* sp. nov.
 Lateral margin of dorsolateralia 4 much shorter than lateral margin of platelet bearing 1g5
 *testudinata* Walter

***Mamersa corndorl* sp. nov.**

(Figs 1-11)

Type material. HOLOTYPE — σ , Corndorl Billabong, near Jabiru, Northern Territory, 3.v.1983, M. Malipatil, J. Fyson and A. Sharley, NTM A15 (SL). PARATYPES — NORTHERN TERRITORY: 5 σ , 8 f , same data, NTM A16-28 (SL); 2 σ , 2 f , same data, NMV K840-843 (SL); 1 f , same data except 5.i.1983, NTM A29 (SL); 1 deutonymph, same data except 5.ii.1983, NMV K844 (SL); 1 f , 2 deutonymphs, same data except 1.iii.1983, NTM A30-32 (SL); 6 adults, same data except 4.v.1983, NMV K845-850 (FL); 1 σ , 1 f , same data except 1.vi.1983, NTM A33-34 (SL); 8 adults, same data except 1.vi.1983, NTM A35-42 (FL).

Additional material. NORTHERN TERRITORY: 67 adults and 5 deutonymphs, Corndorl Billabong, near Jabiru, 5.ii.-1.vi.1983, M. Malipatil, J. Fyson and A. Sharley, NTM (FL).

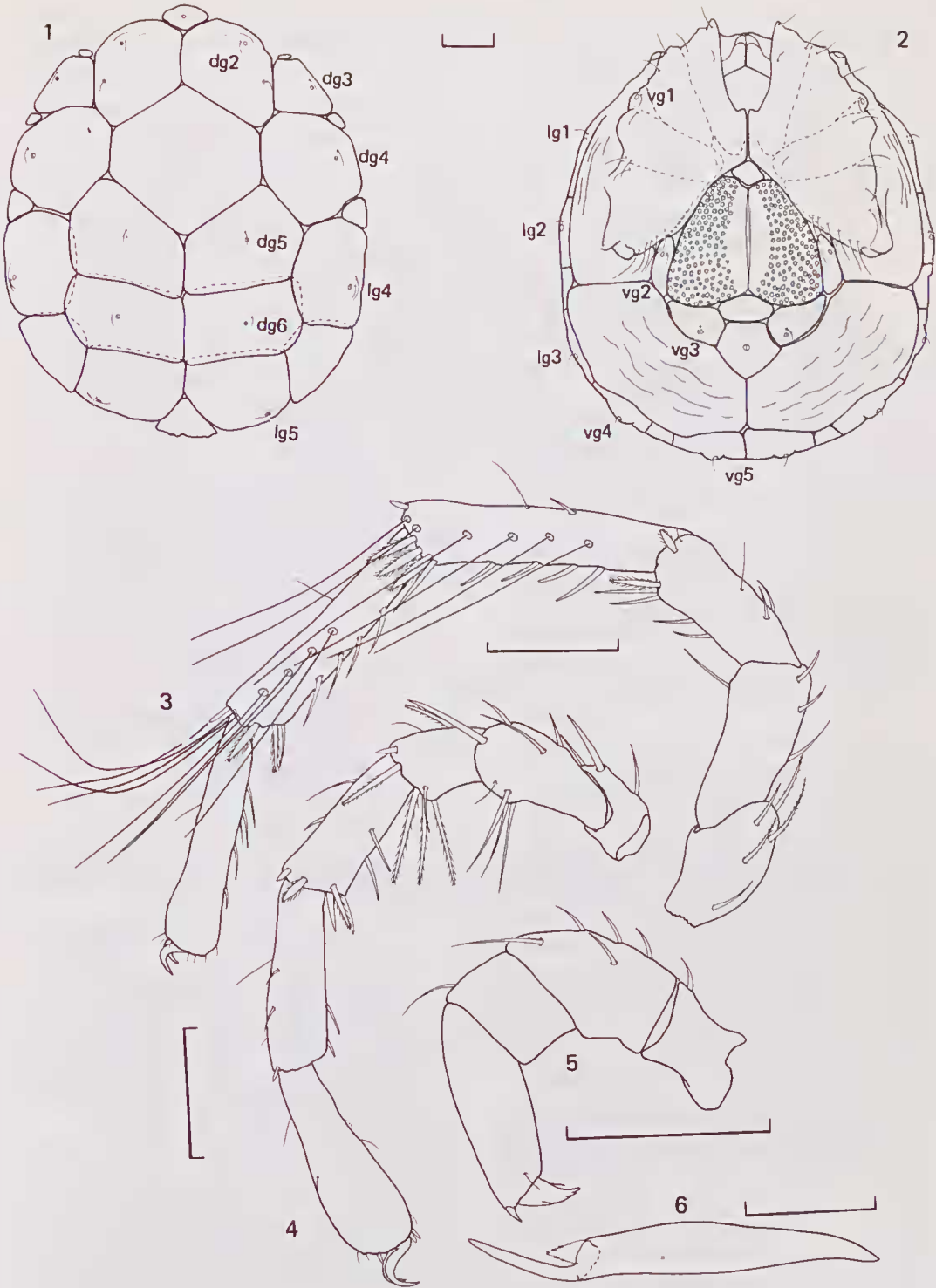
Diagnosis. Ventrolateralia undivided. Lateral margin of dorsolateralia 4 approximately same length as lateral margin of platelet bearing 1g5.

Description. *Adults:* Dorsal and ventral shields present. Lateral eyes on small ocular tubercles set in lateral margin of ventral

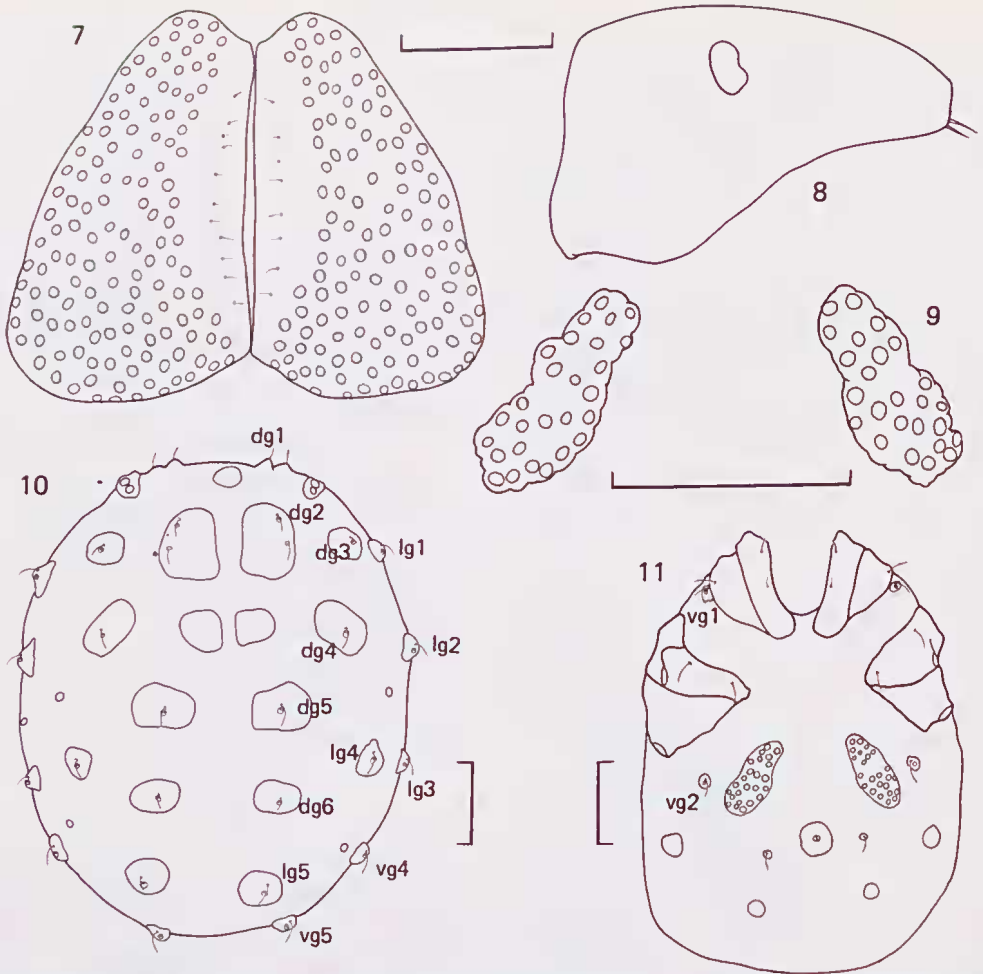
shield, eyes of similar size; median eye apparently absent, but a small unsclerotized area in the centre of dorsocentralia 1 (Fig. 1) may represent a vestigial median eye. Six pairs of dorsoglandularia, five pairs of lateroglandularia and five pairs of ventroglandularia present (Figs 1, 2); dg1 and preocularia situated on anterior margin of ventral shield (not visible in Figs 1 or 2); dg3 on same level as postocularia; lateral margin of dorsolateralia 4 approximately same length as lateral margin of platelet bearing 1g5; lg1, lg2, lg3, vg4 and vg5 situated on small platelets on lateral margin of body; vg2 situated on small sclerite lateral to genital field; vg3 on same level as anus or slightly anterior to anus; vg2 and vg3 sclerites adjacent, not separated by genital field; ventrolateralia undivided. Genital region (Fig. 7): mesal edge of genital flaps with a row of small setae; many pairs of acetabula situated on flaps. Ejaculatory complex not studied. Chelicera (Fig. 6) slender, cheliceral claw slightly curved, with several short teeth; cheliceral lamella about one-third as long as claw, serrate. Capitulum (Fig. 8) with down-turned anterior extension. Pedipalp (Fig. 5): tibia without a thickened sub-distal seta on medial surface, but with stout distal seta. Coxae I-III without stout setae on distal ends (Fig. 2). Legs III and IV with swimming setae arranged as follows: leg III: σ , genu 5-6, tibia 5-8; f , genu 6-7, tibia 6-8; leg IV: σ , telofemur 1, genu 6-8, tibia 5-6; f , telofemur 1, genu 7-8, tibia 5-8. Pedal claws with small serrations, but without a dorsal tooth (Figs 3, 4).

Dimensions (μm), σ (f): dorsal shield 811-922/685-779 (844-1018/753-871); ventral shield 830-894/704-779 (849-1018/760-859); capitulum length 221 (243-293); chelicera length 340 (333-364); genital field 255-278/314-349 (246-306/289-339); pedipalp: trochanter 48-50 (48-51), femur 82-87 (89-95), genu 40-45 (48-51), tibia 108-116 (119-122), tarsus 35-40 (35-39); leg I: trochanter 76-88 (82-90), basifemur 117-124 (123-135), telofemur 84-96 (92-109), genu 134-143 (134-155), tibia 153-161 (154-165), tarsus 159-166/54-59 (154-166/51-57); leg IV: trochanter 138-154 (146-167), basifemur 111-118 (125-147), telofemur 134-141 (134-160), genu 218-226 (218-250), tibia 210-224 (221-233), tarsus 180-204/40-43 (197-211/40-45).

Deutonymphs: Dorsal and ventral shields absent; dorsum and venter with platelets



Figs 1-6. *Mamersa corndorl*: 1-5, holotype ♂ — 1, dorsal shield; 2, ventral shield; 3, left leg IV; 4, left leg I; 5, right pedipalp. 6, paratype ♀, left chelicera. Figs 1,2, to same scale. Scale lines 100 μ m.



Figs 7-11. *Mamersa corndorl*: 7, 8, holotype ♂ — 7, genital field; 8, capitulum, lateral aspect; 9-11, paratype deutonymph, NTM A32 — 9, provisional genital field; 10, dorsal aspect; 11, ventral aspect. Figs 7, 8, to same scale. Scale lines 100 μm .

arranged as in Figs 10, 11. Glandularia as in adults except that *vg3* lacks a glandularium and is reduced to a single seta. Provisional genital field (Fig. 9) with many acetabula situated in two discrete fields. Pedipalp and legs much as in adults.

Dimensions (μm): body 596-811/486-626.

Etymology. The specific epithet is a noun in apposition taken from the type locality.

Remarks. *Mamersa corndorl* is very similar to the African species *M. testudinata*, but they differ in the relative sizes of dorsolateralia 4 and the platelet bearing *lg5*, and in the shape of the capitulum (compare Fig. 8 with Bader 1964, Fig. 3). Despite the unusual nature of the dorsal and ventral shields of *Mamersa* spp., the homologies of the glandularia with those of other hydryphantids

(e.g. see Harvey 1987) are easily established.

Genus *Pseudohdryphantes* K. Viets

Pseudohdryphantes K. Viets, 1907: 142; K. Viets 1936: 144; K. Viets 1956: 157; Cook 1974: 88; Harvey 1987: 108 (type species *Pseudohdryphantes parvulus* K. Viets, 1907, by monotypy).

Diagnosis. See Cook (1974) and Harvey (1987).

Remarks. As noted by Harvey (1987), seven species of *Pseudohdryphantes* have been described from Australia, with further species known from Europe, North America and New Zealand. The three new species described here are of zoogeographical interest in that they extend the range of the genus into the tropics. The key to the Australasian species of *Pseudohdryphantes*

presented by Harvey (1987) is amended here to accommodate the three new species from the Northern Territory.

**Key to Australasian species of
*Pseudohdryphantes***

1. Glandularia completely surrounded by sclerotized rings 2
- Glandularia only partially surrounded by sclerotized rings thus forming crescents 3
- 2(1). Tarsal claws with ventral serrations; chelicerae not elongate; capitulum without extension *bebelus* Cook
- Tarsal claws without ventral serrations; chelicerae elongate; capitulum with long, down-turned anterior extension to accommodate chelicerae *occabus* Harvey
- 3(1). Tarsal claws with large, ventral serrations *vepres* Harvey
- Tarsal claws ventrally smooth or with one small ventral tooth 4
- 4(3). Tarsal claws with one small ventral tooth *doegi* Harvey
- Tarsal claws without ventral teeth 5
- 5(4). Chelicerae elongate; capitulum with long down-turned anterior extension to accommodate chelicerae *stylatus* Cook
- Chelicerae not elongate; capitulum without extension 6
- 6(5). Setae on genital flaps very short *amatus* Cook
- Setae on genital flaps long 7
- 7(6). Sclerites associated with glandularia stellate *mataranka* sp. nov.
- Sclerites associated with glandularia not stellate 8
- 8(7). Sclerites associated with glandularia small, not crescent shaped *crassipes* Cook
- Sclerites associated with glandularia crescent shaped 9
- 9(8). Sclerites associated with median eye, preocularia and postocularia thick ... *aroon* sp. nov.
- Sclerites associated with median eye, preocularia and postocularia thin 10
- 10(9). Mesal seta of pedipalpal tibia sub-distal; ♂ genital flaps with single, mesal row of setae

..... *cooki* Harvey
 Mesal seta of pedipalpal tibia sub-basal to medial; ♂ genital flaps with setae covering most of flaps, not confined to mesal edge

***Pseudohdryphantes wangi*
sp. nov.
(Figs 12-18)**

Type material. HOLOTYPE — ♂, pool at base of Wangai Falls, Litchfield Park, Northern Territory, 27.vi.1987, M.S. Harvey and M.E. McKaige, NTM A43 (SL). PARATYPES — NORTHERN TERRITORY: 1 ♂, 1 ♀, same data as holotype, NTM A44-45 (SL); 6 ♂, 2 ♀, same data as holotype, NMV K828-835 (SL, FL); 1 ♀, Dunlop's Swamp, Katherine Gorge National Park, 7.vii.1987, M.S. Harvey and A.L. Yen, NMV K836 (SL).

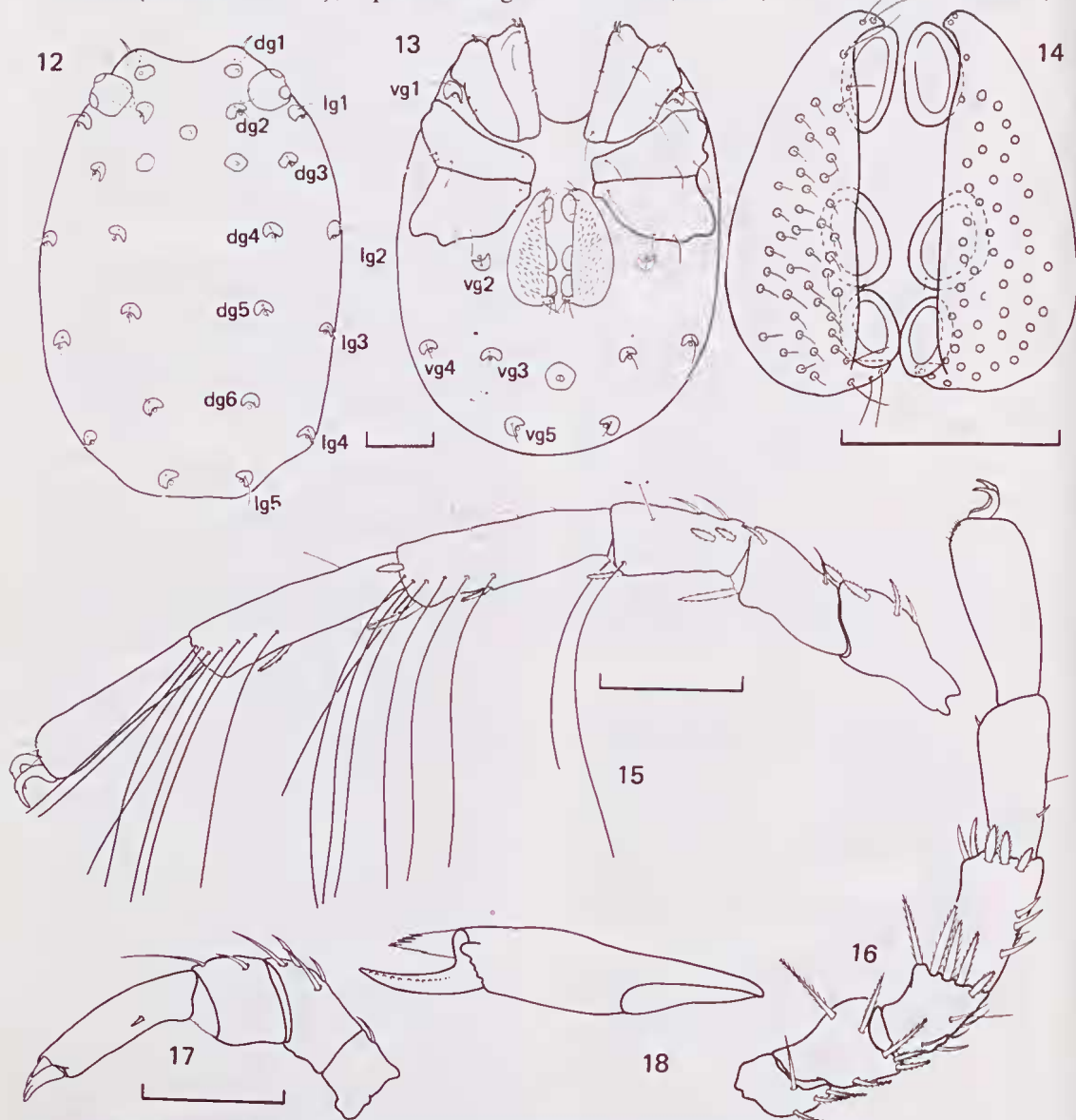
Diagnosis. Glandularia only partially surrounded by sclerotized rings thus forming crescents. Tarsal claws without ventral teeth. Pedipalpal tibia with a sub-basal to medial seta on mesal surface. Male genital flaps with setae covering most of flaps, not confined to mesal edge.

Description. *Adults:* Integument papillate. Lateral eyes on ocular tubercles; anterior-lateral eye slightly larger than posterior-lateral eye; postocularia posterior to median eye, but on same level as dg3 (Fig. 12). Six pairs of dorsoglandularia, five pairs of lateroglandularia and five pairs of ventroglandularia present (Figs 12, 13); sclerites associated with glandularia crescent shaped (Figs 12, 13); vg3 and vg4 slightly anterior to anus, not near genital flaps (Fig. 13). Genital region of male (Fig. 14) wider than that of female (those of all available females not in suitable position to illustrate); genital flaps of male with setae covering most of flaps, not confined to mesal edge; genital flaps of female with a row of several setae confined to mesal edge; three pairs of elliptical to ovoid acetabula (Fig. 14). Ejaculatory complex with proximal arm slightly longer than proximal chamber. Chelicera (Fig. 18) of normal proportions, cheliceral claw curved, with 18-20 short teeth; cheliceral lamella about half as long as claw, serrate. Capitulum without long, down-turned anterior extension. Pedipalp (Fig. 17): tibia with a thickened sub-basal to medial seta on mesal surface,

and with stout distal seta. Coxae I-III with 1-2 stout setae on distal ends (Fig. 13). Legs III and IV with swimming setae arranged as follows: leg III: ♂, telofemur 1, genu 6, tibia 7-8; ♀, telofemur 1 genu 6, tibia 8; leg IV: ♂, telofemur 2, genu 8-9, tibia 7-8; ♀, telofemur 2, genu 7-8, tibia 6-7. Pedal claws without serrations, but with a dorsal tooth (Figs 15, 16). Anus surrounded by sclerotized ring (Fig. 13).

Dimensions (μm), ♂ (♀): body 685-763/448-531 (731-803/477-572); capitulum length

192-206 (193-221); chelicera length 269-282 (275-307); genital field 161-177/147-160 (165-180/161-165); pedipalp: trochanter 39-45 (41-44), femur 79-83 (84-86), genu 45-51 (51-53), tibia 126-138 (134-141), tarsus 34-37 (33-38); leg I: trochanter 51-53 (54-61), basifemur 54-64 (58-64), telofemur 70-83 (75-77), genu 92-108 (97-105), tibia 109-122 (116-120), tarsus 122-139/51-55 (127-133/52-54); leg IV: trochanter 95-109 (109-117), basifemur 73-83 (79-81), telofemur 96-108 (108-110), genu 141-165 (156-161), tibia 142-173 (164-172),



Figs 12-18. *Pseudohdryphantes wangai*: holotype ♂, except Fig. 15: 12, dorsal aspect; 13, ventral aspect; 14, genital field, setae on left side not shown; 15, left leg IV, paratype ♀, NTMA45; 16, right leg I; 17, right pedipalp; 18, chelicera. Figs 12, 13, to same scale; 15, 16, to same scale; 17, 18, to same scale. Scale lines 100 μm .

tarsus 140-166/43-44 (147-154/44-45).

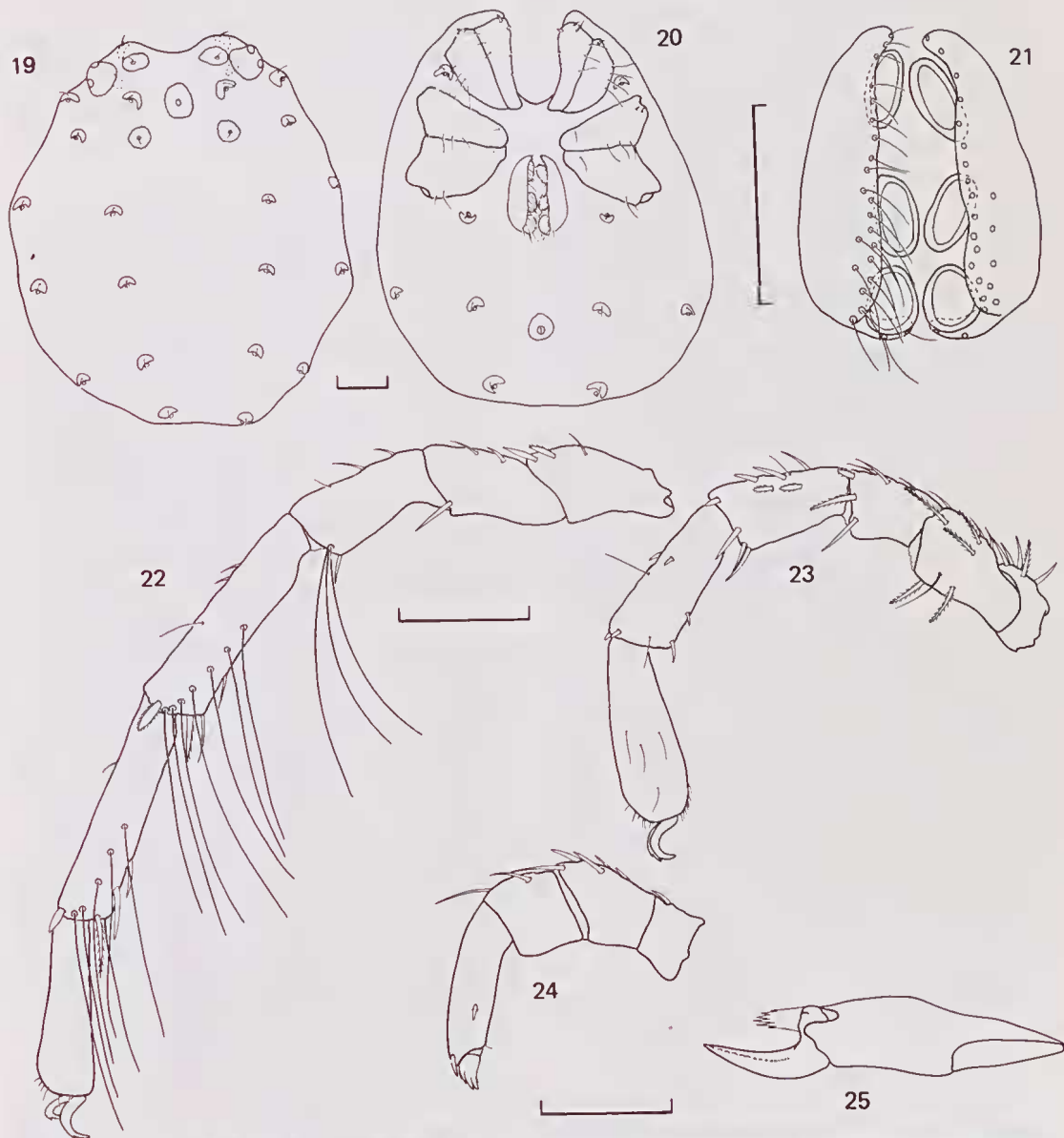
Etymology. The specific epithet is a noun in apposition taken from the type locality.

Remarks. *Pseudohydryphantes wangi* is very similar to *P. cooki* from Victoria, but differs in the position of the mesal seta on the pedipalpal tibia, and by its small size. Males further differ from all known males of the genus in the presence of many setae covering much of the genital flaps; other species pos-

sess setae confined largely to the mesal edge of the flaps.

Pseudohydryphantes aroona
sp. nov.
(Figs 19-25)

Type material. HOLOTYPE — ♂, tributary of Aroona Creek, 41 km NE. of Victoria River on Victoria Highway, Northern Territory, 8.vii.1987, M.S. Harvey and A.L. Yen, NTM A46 (SL).



Figs 19-25. *Pseudohydryphantes aroona*: holotype ♂—19, dorsal aspect; 20, ventral aspect; 21, genital field, setae on left side not shown; 22, left leg IV; 23, left leg I; 24, right pedipalp; 25, chelicera. Figs 19, 20, to same scale; 22, 23, to same scale; 24, 25, to same scale. Scale lines 100 μ m.

Diagnosis. Glandularia only partially surrounded by sclerotized rings thus forming crescents. Tarsal claws without ventral teeth. Male genital flaps with setae confined to mesal edge.

Description. *Adult male:* Integument papillate. Lateral eyes on ocular tubercles; anterior-lateral eye slightly larger than posterior-lateral eye; postocularia posterior to median eye but on same level as dg3 (Fig. 19); sclerites associated with median eye, preocularia and postocularia thick. Six pairs of dorsoglandularia, five pairs of lateroglandularia and five pairs of ventroglandularia present (Figs 19, 20); sclerites associated with glandularia crescent shaped (Figs 19, 20); vg3 slightly anterior to anus, and on same level as vg4, not near genital flaps (Fig. 20). Genital region (Fig. 21): mesal edge of flaps with a row of approximately 20 setae; three pairs of acetabula, first two pairs elliptical, third pair ovoid. Ejaculatory complex with proximal arm slightly longer than proximal chamber. Chelicera (Fig. 25) of normal proportions, cheliceral claw curved, with 15 short teeth; cheliceral lamella about half as long as claw, serrate. Capitulum without long, down-turned anterior extension. Pedipalp (Fig. 24): tibia with a thickened sub-distal seta on medial surface, and with stout distal seta. Coxae I-III with 1-2 (usually 1) stout setae on distal ends (Fig. 20). Legs III and IV with swimming setae arranged as follows: leg III: telofemur 2, genu 5, tibia 6; leg IV: telofemur 3, genu 7, tibia 6. Pedal claws without serrations, but with a dorsal tooth (Figs 22, 23). Anus surrounded by sclerotized ring (Fig. 20).

Dimensions (μm): body 795/565; capitulum length 192; chelicera length 285; genital field 160/122; pedipalp: trochanter 45, femur 88, genu 56, tibia 136, tarsus 33; leg I: trochanter 52, basifemur 65, telofemur 78, genu 114, tibia 130, tarsus 148/52; leg IV: trochanter 119, basifemur 86, telofemur 114, genu 179, tibia 191, tarsus 153/45.

Etymology. The specific epithet is a noun in apposition taken from the type locality.

Remarks. This species is most similar to *P. cooki* and *P. wangai* but differs from these species by the enlarged sclerotized rings surrounding the median eye, preocularia and postocularia.

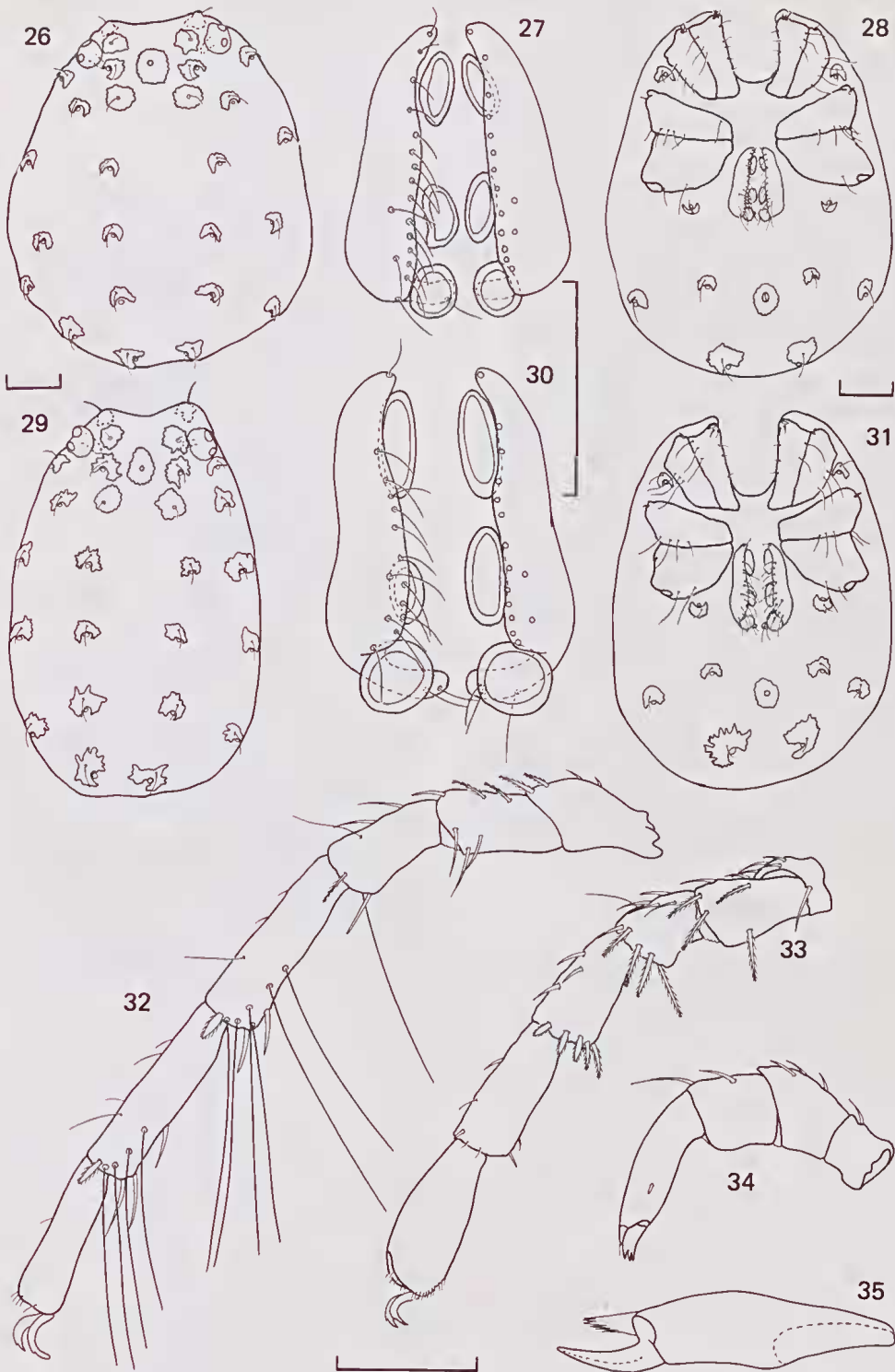
Pseudohydryphantes mataranka
sp. nov.

(Figs 26-35)

Type material. HOLOTYPE — ♂, Roper River, 1.5 km S. of Mataranka Springs, Northern Territory, 5.vii.1987, M.S. Harvey and A.L. Yen, NTM A47 (SL). PARATYPE — NORTHERN TERRITORY: 1 ♀, pool at base of Wangai Falls, Litchfield Park, 27.vi.1987, M.S. Harvey and M.E. McKaige, NMV K788 (SL).

Diagnosis. Sclerites associated with glandularia, median eye, preocularia, postocularia and anus stellate or crenulate; those associated with glandularia not forming a ring. Tarsal claws without ventral teeth. Male genital flaps with setae confined to mesal edge.

Description. *Adults:* Integument papillate. Lateral eyes on ocular tubercles; anterior-lateral eye larger than posterior-lateral eye; postocularia posterior to median eye and on same level as dg3 (Figs 26, 29). Six pairs of dorsoglandularia, five pairs of lateroglandularia and five pairs of ventroglandularia present (Figs 26, 28, 29, 31); sclerites associated with glandularia stellate, especially in ♀, not surrounding glandularia (Figs 26, 28, 29, 31); vg3 slightly anterior to level of anus and vg4, and not near genital flaps (Figs 28, 31). Genital region (Figs 27, 30) of male wider than those of female, mesal edge of flaps with a row of approximately 16 (♂), 14 (♀) setae; three pairs of acetabula, first two pairs elliptical, third pair ovoid. Ejaculatory complex with proximal arm slightly longer than proximal chamber. Chelicera (Fig. 35) of normal proportions, cheliceral claw curved, with 14-15 short teeth; cheliceral lamella about half as long as claw, serrate. Capitulum without long, down-turned anterior extension. Pedipalp (Fig. 34): tibia with a thickened sub-distal seta on medial surface, and with stout distal seta. Coxae I-III with 1-3 (usually 1) stout setae on distal ends (Figs 28, 31). Legs III and IV with swimming setae arranged as follows: leg III: ♂, ♀, telofemur 1, genu 5, tibia 6; leg IV: ♂, ♀, telofemur 2, genu 6, tibia 5; ♀, telofemur 2, genu 4, tibia 6. Pedal claws without serrations, but with a small dorsal tooth (Figs 32, 33). Anus surrounded by stellate sclerotized ring (Figs 28, 31).



Figs 26-35. *Pseudohdryphantes mataranka*: holotype ♂, except Figs 29-31: 26, dorsal aspect; 27, genital field, setae on left side not shown; 28, ventral aspect; 29, dorsal aspect, paratype ♀; 30, genital field, setae on left side not shown, paratype ♀; 31, ventral aspect, paratype ♀; 32, left leg IV; 33, right leg I; 34, right pedipalp; 35, chelicera. Figs 26, 29, to same scale; 27, 30, to same scale; 28, 31, to same scale; 32-35, to same scale. Scale lines 100 μ m.

Dimensions (μm), ♂ (♀): body 717/512 (666/448); capitulum length 160 (180); chelicera length 249 (255); genital field 140/107 (161/117); pedipalp: trochanter 41 (40), femur 78 (78), genu 49 (45), tibia 120 (123), basifemur 46 (51), telofemur 64 (64), genu 91 (95), tibia 105 (102), tarsus 117/48 (121/51); leg IV: trochanter 103 (96), basifemur 70 (69), telofemur 88 (87), genu 134 (137), tibia 148 (147), tarsus 121/35 (137/43).

Etymology. The specific epithet is a noun in apposition taken from the type locality.

Remarks. This remarkable species is unlike any other species of the genus in the possession of stellate sclerites associated with the glandularia, median eye, preocularia, postocularia and anus, especially in the female.

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